ADOLESCENTS IN THE AGE OF AIDS: MYTHS, MISCONCEPTIONS, AND MISUNDERSTANDINGS REGARDING SEXUALLY TRANSMITTED DISEASES

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The purpose of this study is twofold: to evaluate the extent of knowledge possessed by young people residing in an urban sexually transmitted disease (STD) and AIDS epicenter about STDs, including AIDS; and to determine whether knowledge levels varied by age, gender, race/ethnicity, and/or previous health instruction. A total of 867 adolescents (472 females and 395 males) attending a large public high school in New York City completed a self-administered survey. Levels of knowledge about AIDS transmission and prevention were high (mean percentage correct = 91.8%). Nonetheless, adolescent respondents lacked awareness about the prevalence of common STDs, had limited understanding of the ways in which these diseases can be transmitted and prevented, and were unaware of potentially serious sequelae resulting from exposure to infectious agents (e.g., infertility from chlamydial infections). Young people who had taken a health education course in which STDs were discussed did slightly better on the knowledge survey than did their peers. While the prevention of HIV infection is, and should be, a national priority, more concerted efforts are needed to better educate young people about other STDs in the overall context of sexual health. (*J Natl Med Assoc.* 2001;93:64–69.)

Key words: adolescents ◆ sexually transmitted diseases ◆ AIDS

INTRODUCTION

Annually, an estimated 12 million people in the U.S. are infected with a sexually transmitted disease (STD);[1] of these, three million are teenagers.[2] Sexually active adolescents have a higher prevalence of STD infections than do sexually active adults.[3] One of every four sexually active teenagers will acquire an STD before having graduated from high school.[4] Most of these infections will be asymptomatic.[5]

Given the potentially serious sequelae of these diseases, e.g., infertility and even death in rare cases, it is important for young people to make informed and cautious decisions regarding their sexual behaviors. Objectives set forth by the U.S. Department of Health and Human Services in *Healthy People 2000: National Health Promotion Disease Prevention Objectives*

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recognized this need. The provision of accurate and timely information about STDs to every junior and high school student was deemed a high priority.[6]

This objective has been partially met due to an enhanced awareness among teenagers about HIV/AIDS. Despite the fact that AIDS is a relatively rare disease among adolescents, several surveys have found that young people are aware of the modes of transmission and ways to prevent HIV infection.[7–9] Less is known about the extent to which teenagers are informed about STDs other than AIDS. In a national survey of teens aged 15 to 17 performed by the Kaiser Family Foundation, just over one-third of teenagers reported that they knew "a lot" about STDs.[10]

To evaluate the extent of knowledge possessed by young people about STDs, including AIDS, a survey was administered to a sample of urban high school students. There were two main goals of the survey: first, to investigate levels of knowledge about STDs, including AIDS, among young people residing in an urban STD and AIDS epicenter; and second, to determine whether knowledge levels varied by age, gender, race/ethnicity, and/or previous health instruction.

METHODS

Participants

The eligible study population consisted of English-speaking students attending a large public academic high school in New York City in the spring of 1990. The study was approved by the Institutional Review Board at the lead author's hospital center. A total of 954 students in grades 9 to 12 were surveyed in their classrooms, representing 70% of the eligible population. The remaining 30% of eligible students were absent on the day the survey was administered. Of the returned surveys, 867 (90.9%) were completed and are included in the present analyses. None of the eligible students or their parents refused to participate.

Measures

A self-administered survey was developed to assess seven domains of knowledge about STDs other than AIDS, namely: (a) recognition of STDs by name; (b) recognition of STDs by symptoms; (c) recognition of the asymptomatic nature of certain STDs; (d) recognition of the modes of transmission of STDs; (e) recognition of strategies to prevent STD acquisition; (f) recognition of the sequelae of STDs; and (g) potential barriers to seeking care for treatment of STDs. In addition, three items assessed basic knowledge about AIDS. The reliability of the total scale, as measured by Cronbach's alpha, was 0.81. Items on the survey were pretested with focus groups of adolescents drawn from a separate, demographically similar population. The survey was modified slightly based upon the focus group findings. Two fourth-year medical students distributed the survey under the supervision of the lead author during the high school students' health class periods. All respondents were assured that their responses to the survey would be kept completely confidential, and that their participation in the survey was strictly voluntary.

Upon completion of the questionnaire, the medical students distributed brochures containing information on the recognition, treatment, and prevention of STDs to the students. A debriefing session was held and questions raised by the high school students were answered. At the completion of the session, the medical students passed out literature listing health care resources in the community that offered free or low-cost, confidential reproductive health care services for young people, including a comprehensive school-based clinic located within their high school.

Statistical Analysis

The mean percentage correct and standard deviations were calculated for the total STD knowledge scale, the total AIDS knowledge scale, the STD subscales, and each individual item. Multiple regression was used to assess the combined effects of age, gender, race/ethnicity, and previous health instruction on knowledge scores.

RESULTS

The demographic characteristics of the students completing the survey are presented in Table 1. Note that among those who self-reported their race/ethnicity, the overwhelming majority identified themselves as being African-American or Hispanic. As shown in Table 2, the mean percentage correct on the total STD scale (67%) was substantially lower than that on the total AIDS scale (92%). Moreover, important deficits in certain domains of STD knowledge were observed, especially for recognition of the sequelae of untreated STDs and rec-

Table 1. Demographic Characteristics of Participating High School Students, New York City, 1990 (n = 867)*

Parameter	%
Grade	
9th	18.6
10th	35.6
11th	21.7
12th	24.1
Age (yr)*	
17.2 ± 1.4	
Gender	
Male	45.6
Female	54.4
Self-reported race/ethnicity	
Black	36.6
Latino	39.4
Other	4.4
Unknown	19.6

*Mean age in years is 17.2 ± 1.4.

ognition of STDs by symptom. Only 7% of adolescent respondents were able to correctly identify chlamydia as the most common STD (41% named "AIDS" and 36% named "gonorrhea"). Most respondents (80%) did not know that a vaginal discharge is a common symptom of an STD infection among women; 60% of students did not know that STDs might be asymptomatic or "silent."

In terms of understanding STD transmission, 40% of students thought that STD germs are harbored only in the penis or vagina and 20% of students thought that infections could be acquired by touching a doorknob or sitting on a toilet seat. Almost 20% of students thought birth control pills could prevent STD transmission and 20% did not know that condoms could effectively block the transmission of many venereal agents. In contrast, over 90% of the students realized that AIDS is not spread by casual contact, and that having unprotected intercourse with a high-risk partner and sharing contaminated needles were potential modes of HIV transmission.

With respect to STD sequela, 80% of students did not know that condyloma (human papilloma virus) could predispose women to develop cervical cancer. Finally, while most young people desired medical care if they thought they had acquired an STD, almost half believed that if they went to see a doctor, their parents would be notified. (In fact, New York State law allows for the confidential provision of reproductive services to teens, i.e., without parental notification or consent.)

The results of the regression analyses (Table 3) revealed no consistent age, gender, or race/ethnicity differences in knowledge scores. However, adjusted for these items, having had health instruction previously was significantly associated with close to a 10% increase in knowledge for all of the STD scales tested.

DISCUSSION

The results of this survey demonstrate that, despite living in an urban area endemic for STD and AIDS, this sample of adolescents had strikingly low levels of knowledge about STDs, particularly with regard to how they are transmitted and prevented. In contrast, adolescents' knowledge about AIDS was high.

Since the survey sample consisted of urban adolescents from one high school, the findings are not necessarily generalizable to other populations. Nonetheless, since urban adolescents of color are disproportionately impacted by STDs compared with other population groups,[11] and since deficits in STD knowledge among adolescents have been reported in other studies, it is important to consider the possible impact of these consistent findings.

The Kaiser Family Foundation queried 400 teens aged 15 to 17 years across the United States to assess their knowledge, attitudes, and behaviors concerning STDs using a random telephone survey.[10] Results were that although most US teens (89%) know that AIDS is not the only incurable STD, knowledge of which specific STDs are incurable was poor. Whether or not teens considered themselves knowledgeable about STDs other than AIDS, all teens surveyed grossly underestimated the incidence of particular STDs and demonstrated an overall lack of knowledge regarding STDs other than AIDS. While 90% of the teens surveyed knew that a person with an STD can spread it even if that person has no symptoms, about one-third (29%) of the respondents held the contradictory belief that they themselves had never had an STD because they had not noticed any symptoms.[10]

Deficits in knowledge are by no means limited to adolescents. Minichiello et al., in a study of over 600 college students in Australia, found that 60% of respondents were unaware that most chlamydial in-

Table 2. Percent Correct on the STD Scales and Individual Items, Percent Correct Responses of STDs by Name, and Most Common STDs Reported Among High School Students, New York City, 1990

Knowledge scales	No. of items comprising scale	Percent correct	SD
Total STD knowledge	28	67.1	13.6
Recognition of STDs by name	11	68.4	18.1
Recognition of STDs by symptoms	4	44.3	21.4
Recognition of asymptomatic nature of STDs	3	56.5	30.0
Recognition of modes of STD transmission	4	68.4	25.3
Recognition of STD prevention strategies	3	86.5	23.0
Recognition of the sequelae of untreated STDs	1	21.1	40.0
Barriers to seeking treatment of STDs	2	75.4	24.7
AIDS knowledge	3	91.8	18.1
Recognition of STD by name		Percent correct responses	
Herpes		74	
Conjunctivitis (pinkeye)		95	
Syphilis		73	
Lyme disease		90	
Gonorrhea		80	
Measles		94	
AIDS		77	
Tuberculosis (TB)		94	
Condyloma		27	
Chlamydia		27	
Most common STD		Percent of responses	
AIDS		41	
Syphilis		14	
Chlamydia		7	
Gonorrhea		36	
Other		2	

fections in women are asymptomatic.[12] Radius et al. found that 12% of the 151 female college students they surveyed in Maryland thought that withdrawal could decrease their risk of getting an STD.[13] In all three studies, knowledge about AIDS was significantly higher than knowledge about other STDs, consistent with the current findings.

These results also showed that students exposed to general health education courses (hygiene) in which STDs were discussed performed better on the knowledge items than those students who had not received this instruction, indicating that classroom-based education can have a salutary effect on awareness about STDs. However, this effect was modest, perhaps because STD instruction was limited in scope and content. In reviewing the syllabus, important omissions were noted, e.g., chlamydia and condyloma were never mentioned. Although STD instruction is a part of most sex education curricula throughout the U.S., only 63% of teachers reportedly discussed chlamydia with their students and only 51% talked with them about condyloma. In contrast, 96% of teachers reviewed AIDS in some detail.[14]

It is essential to deliver critical STD information to adolescents before their sexual debuts. In New York City, STD instruction is generally offered in the 11th grade, notwithstanding the fact that many students have been sexually active since junior high school.

While health professionals and educators have been relatively successful in informing young people about HIV, these gains have not been translated into increased knowledge regarding more prevalent STD infections. Thus, AIDS risk-reduction strategies, which can also protect against other STDs, are

Table 3. Multiple Linear Regression Coefficients of Demographic and Previous Instruction Variables for STD and AIDS-Related Knowledge Scales and STD Subscales

Scale or subscale	Age (per year)	Gender (male vs. female)	Race 1: black vs. all others	Race 2: Hispanic vs. all others	Previous health education instruction	R^2
Total STD scale	−1.4	0.2	1.1	−0.1	8.7‡	0.10
Total AIDS scale	−1.8	2.9	0.4	4.1*	12.3‡	0.11
STD naming	−1.9	3.7	−1.3	−1.5	10.4‡	0.06
STD transmission	−1.7	2.2	0.3	1.8	11.6‡	0.05
STD symptoms	−1.7	1.9	2.0	0.9	8.5‡	0.04
STD asymptomatic	−1.9	0.1	1.7	4.6*	9.0†	0.04
STD prevention	−3.3*	−0.8	−0.9	1.3	8.0†	0.04
STD care seek	−2.6	2.3	1.6	1.1	11.3‡	0.04
STD sequelae	2.1	1.5	1.1	−1.2	8.2*	0.01

*$p < 0.05$.
†$p < 0.01$.
‡$p < 0.001$.

not maximized. Adolescents engaging in high-risk sexual practices, such as anal and oral sex, lack basic knowledge about STD transmission.[15]

These findings are particularly important in light of the relatively high prevalence of anal and oral sex in the adolescent and young adult age groups. Studies have found that 8%–25% of adolescents and young adults engage in anal intercourse.[16,17] One study of the sexual behaviors of urban African-American men reported that 38.5% of participants had engaged in cunnilingus, and 54% had had fellatio performed on them by women.[18]

The results of this survey and others like it point to a failing of AIDS educational programs to protect youth from other sequelae of unprotected sex. Future educational strategies designed to reduce risky sexual behaviors among young people would do well to include instruction about STDs other than AIDS as part of the curriculum. This is particularly important considering the increased susceptibility of HIV infection associated with exposure to certain STDs.[19] More concerted efforts are needed to teach young people the facts about STDs. The devised curriculum should also have a component targeted to younger students so that they can gain essential knowledge prior to engaging in sexual activities.

When designing and implementing sexual health education programs, health educators need to take into account the multiple needs of the young people to whom these programs are targeted. A more holistic approach to sexual education that begins with better communication and understanding regarding general sexual health and particular sexual behaviors and how they affect health and general well-being would be optimal.

Furthermore, in addition to underscoring the importance of condom utilization during penile-vaginal contact, it should be recognized that adolescent sexuality encompasses a range of creative expressions. Thus, specific information about the need to extend protection during oral and anal intercourse should be relayed in frank, nonjudgmental fashions. In addition to informing students about the various types of STDs and their modes of transmission, special attention needs to be paid to the asymptomatic nature of many of these infections. Young people should be given information on the location and availability of confidential, "adolescent friendly" health resources in their communities. While many parents and guardians are supportive of these goals, it is also important to inform teens that, in many communities, they can receive reproductive health care without parental notification or permission. Finally, while providing young people with facts is important, attention needs to be paid toward reducing the impressive structural and psychological barriers that may prevent adolescents from consistently acting in sexually responsible ways.[20,21]

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